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ABSTRACT

This booklet contains released test items from the spring 2000 administration of the eighth grade mathematics and science tests of the Colorado Student Assessment Program. Items are released with the correct answers, and the scoring guide is included for selections from the constructed response portion of the science test. (SLD)

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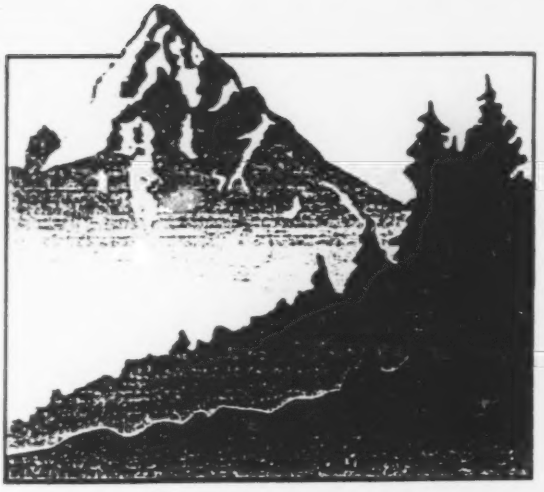
ED 451 197

COLORADO

Student Assessment Program

Released Items
Grade 8 Mathematics
Spring 2000



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Released Items for the Eighth Grade Mathematics [and] Science CSAP

TM032421

CSAP

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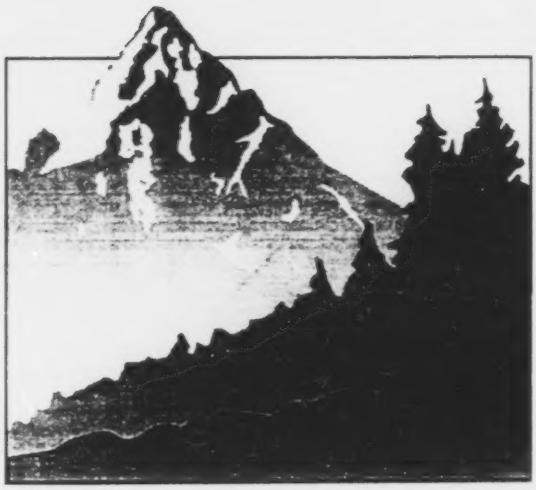
Student Assessment Program

Released Items
Grade 8 Mathematics
Spring 2000



Released Items for the Eighth Grade Mathematics CSAP

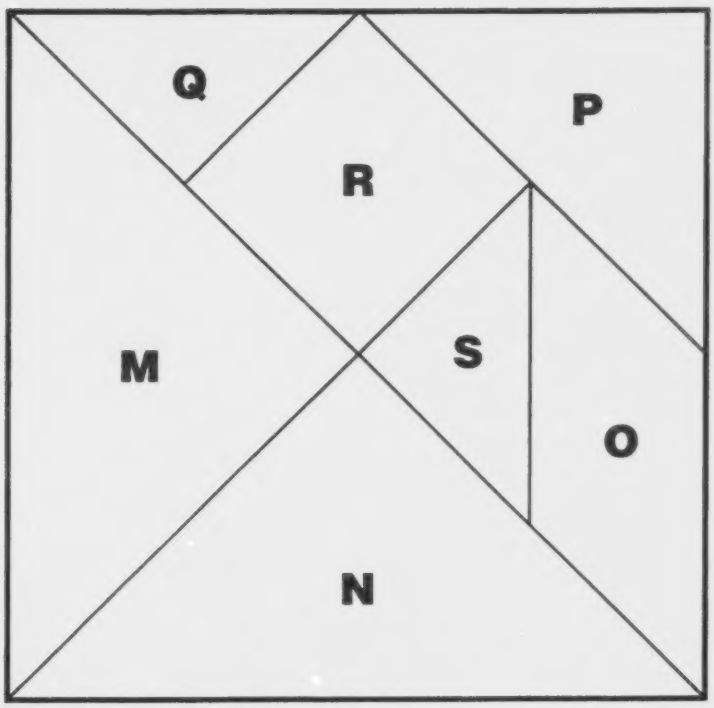
CSAP

CSAP Grade 8
Mathematics

1 From your punch-out tools, you may want to use the tangram pieces to solve this problem.

The tangram pieces form a large square. The large square represents one whole unit, while each piece within the large square represents a fraction.

For each tangram piece, find the fraction of the whole it represents. In the table below, write the fraction for each tangram piece.



Tangram Piece	Fraction
M	
N	
O	
P	
Q	
R	
S	

represents—stands for

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Rubric

Exemplary Response:

Tangram Piece	Fraction
M	$\frac{1}{4}$
N	$\frac{1}{4}$
O	$\frac{1}{8}$
P	$\frac{1}{8}$
Q	$\frac{1}{16}$
R	$\frac{1}{8}$
S	$\frac{1}{16}$

Score Points:

Apply 2-point holistic rubric.

Standard: 1.1 Number Sense

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2-Point Rubric for Short Constructed-Response Items

This rubric is used to score students' responses to short constructed-response items. These items require the students to use problem-solving skills as they apply to all of the Colorado Model Content Standards for mathematics. An item may ask the student to include and communicate reasoning using words and/or numbers, evaluate an answer, or demonstrate the process used to determine an answer.

There are several short constructed-response items in CSAP, each taking approximately 3 to 5 minutes to complete. Each short constructed-response item receives a single score of 0, 1, or 2 points.

2 Points

The response accomplishes the prompted purpose. The student's strategy and execution meet the content (including concepts, technique, representations, and connections), thinking processes, and qualitative demands of the task. Even for tasks that are very open regarding content, the content chosen by the student must serve the purpose well. Communication of the student's response is judged by its effectiveness to convince the reader of the correctness of the response.

1 Point

The response partially accomplishes the prompted purpose. The student's strategy and execution lacks adequate evidence of the learning and strategic tools that are needed to accomplish the task; or it may contain fragments of inappropriate material from the curriculum. The response may show some effort to accomplish the task with little success. It is clear that the student requires additional feedback and/or instruction from the teacher in order to accomplish the task.

0 Points

When the response lacks any evidence of mathematical knowledge or is blank, it is scored a 0. When there are marks, words, or drawings unrelated to the task, it is scored a 0.

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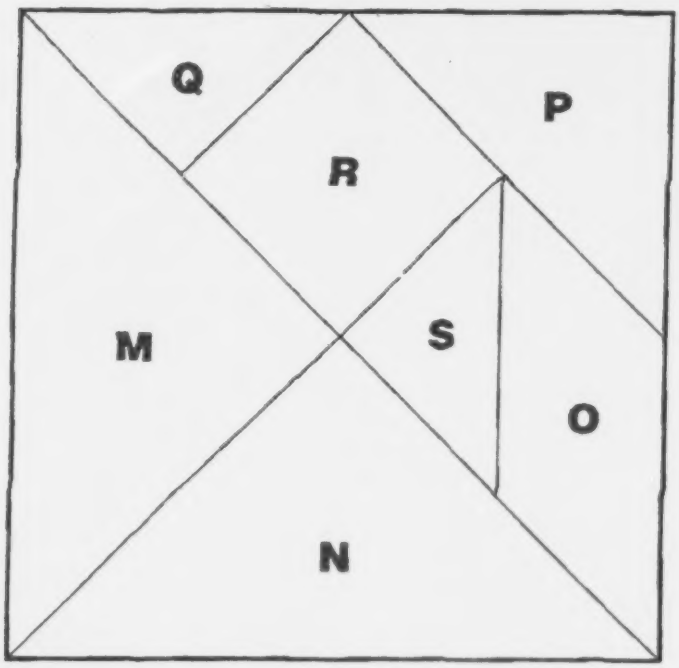

Tangram Piec	Fraction
M	$\frac{1}{4}$
N	$\frac{1}{4}$
O	$\frac{1}{8}$
P	$\frac{1}{8}$
Q	$\frac{1}{16}$
R	$\frac{1}{8}$
S	$\frac{1}{16}$

represents—stands for

6A-1

From your punch-out tools, you may want to use the tangram pieces to solve this problem.

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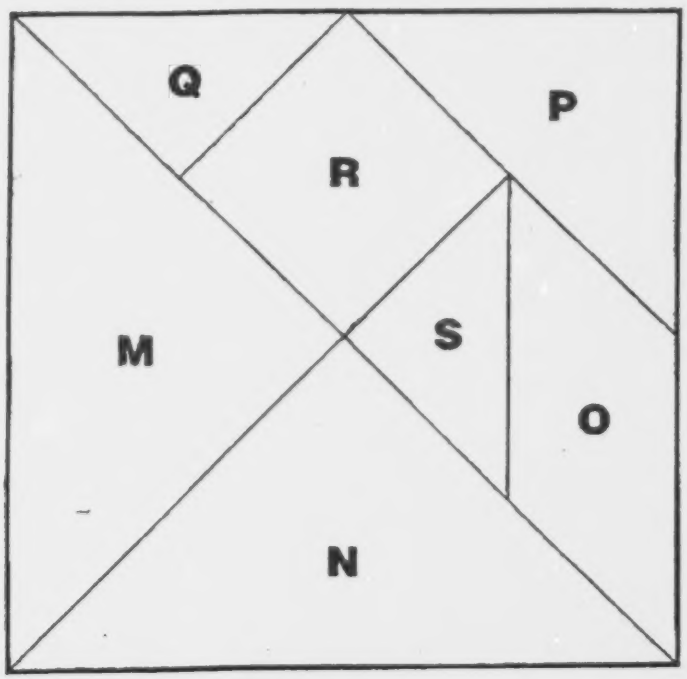

M	1/4
N	1/4
O	1/10
P	1/8
Q	1/2
R	1/10
S	1/2

represents—stands for

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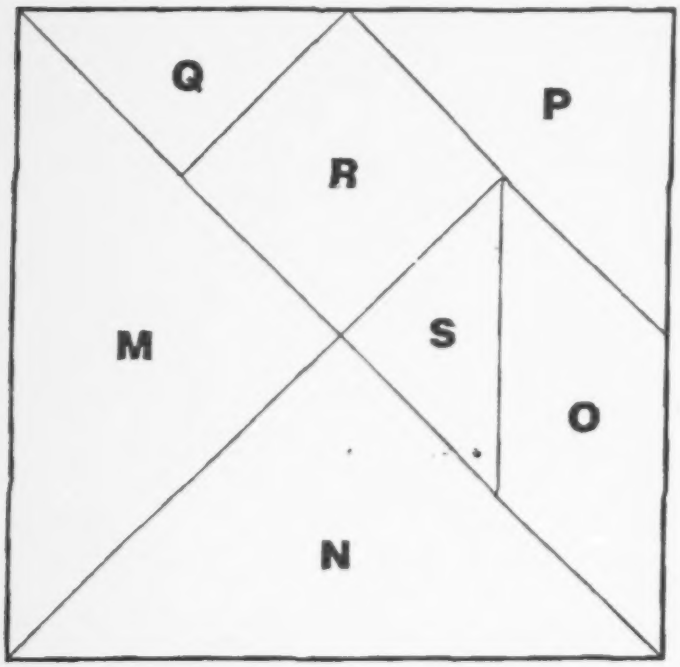
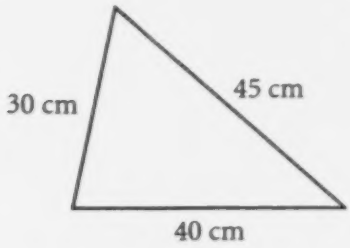


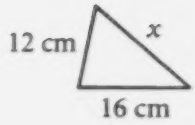
Tangram Piec	Fraction
M	1/25
N	1/25
O	1/10
P	1/2
Q	1/10
R	1/5
S	1/5

represents—stands for

2. Study the triangles below.



Triangle A



Triangle B

If the triangles are similar, what is the length of side x?

- ○ 14 centimeters
- ● 18 centimeters
- ○ 20 centimeters
- ○ 21 centimeters

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3 On a ranch, there is an old hand pump. It takes 6 pumps of the handle to get the first gallon of water. It takes 4 pumps of the handle for each additional gallon of water. If the handle is pumped 34 times, how many gallons of water will have been pumped?

- ○ 7
- ● 8
- ○ 9
- ○ 10

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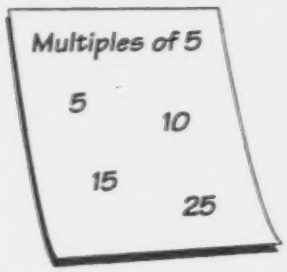
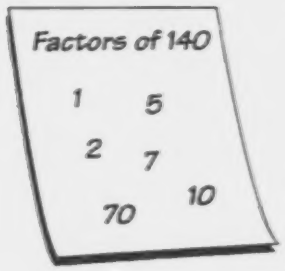
4 Look at the charts at the right.

Which number could be included on both charts?

- ○ 30
- ● 35
- ○ 40
- ○ 75





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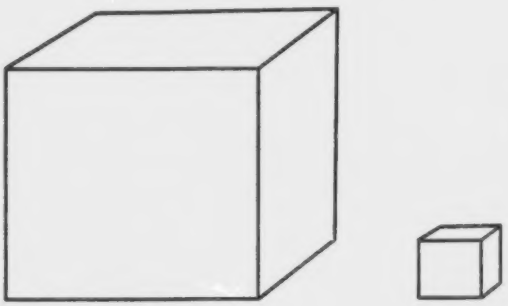
5 The volume of cube A is 64 times the volume of cube B.



A B

If x is equal to the height of cube B, what is the **height** of cube A?

- ● $4x$
- ○ $8x$
- ○ $16x$
- ○ $64x$

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6 A bush 3 feet tall casts a shadow 2 feet long. At the same time of day, a tree near the bush casts a shadow 12 feet long.

What is the height of the tree?

- ○ 12 feet
- ○ 13 feet
- ● 18 feet
- ○ 24 feet

14

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7. Sydney has a collection of 32 rocks, which are kept in a bowl. The probability of picking out a piece of granite from the bowl is $\frac{3}{8}$. How many pieces of granite are in the bowl?

- ○ 3
- ○ 8
- ● 12
- ○ 16

granite—a hard rock

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8 Madeline played 6 rounds of golf. The time it took to play each round is given in the table at the right.

TIME PLAYING GOLF

Round	Time
1	4 hours 32 minutes
2	5 hours 10 minutes
3	4 hours 18 minutes
4	3 hours 58 minutes
5	5 hours 42 minutes
6	4 hours 29 minutes

Estimate to the nearest hour the total time it took Madeline to play the 6 rounds of golf. In the space below, show or explain how you made your estimate and write your answer on the line.

Estimate _____

round—a period of play in a sport or contest

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Rubric

Exemplary Response:

- **Estimate** 28 hours

AND

- If the number of minutes was greater than 30, I increased the hours by 1. Otherwise, I left the hours alone.

TIME PLAYING GOLF

Round	Time	Estimate
1	4 hours 32 minutes	5 hours
2	5 hours 10 minutes	5 hours
3	4 hours 18 minutes	4 hours
4	3 hours 58 minutes	4 hours
5	5 hours 42 minutes	6 hours
6	4 hours 29 minutes	4 hours

Then I added 5 + 5 + 4 + 4 + 6 + 4 = 28

OR

- Other valid response

Score Points:

Apply 2-point holistic rubric.

Standard: 6.3 Operation/Calculation

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33 Madeline played 6 rounds of golf. The time it took to play each round is given in the table at the right.

TIME PLAYING GOLF

Round	Time
1	4 hours 32 minutes
2	5 hours 10 minutes
3	4 hours 18 minutes
4	3 hours 58 minutes
5	5 hours 42 minutes
6	4 hours 29 minutes

Estimate to the nearest hour the total time it took Madeline to play the 6 rounds of golf. In the space below, show or explain how you made your estimate and write your answer on the line.

If the minutes is above 30, you round up and if it is below you round down and then add all of them together

5
+5
4
4
6
4

28

Estimate 28 hrs.

round—a period of play in a sport or contest

33A-1

Madeline played 6 rounds of golf. The time it took to play each round is given in the table at the right.

TIME PLAYING GOLF

Round	Time
1	4 hours 32 minutes
2	5 hours 10 minutes
3	4 hours 18 minutes
4	3 hours 58 minutes
5	5 hours 42 minutes
6	4 hours 29 minutes

Estimate to the nearest hour the total time it took Madeline to play the 6 rounds of golf. In the space below, show or explain how you made your estimate and write your answer on the line.

4
3
4
4
5
+4
26 hours

First I rounded every hour to the nerest hour. Then I add all the hours up to get 26 hours.

Estimate 26 hours

round—a period of play in a sport or contest

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33 Madeline played 6 rounds of golf. The time it took to play each round is given in the table at the right.

TIME PLAYING GOLF

Round	Time
1	4 hours 32 minutes
2	5 hours 10 minutes
3	4 hours 18 minutes
4	3 hours 58 minutes
5	5 hours 42 minutes
6	4 hours 29 minutes

Estimate to the nearest hour the total time it took Madeline to play the 6 rounds of golf. In the space below, show or explain how you made your estimate and write your answer on the line.

$^{1}2$ hours $^{1}32$ min.
5 hours 10 min.
4 hours 18 min.
5 hours 42 min.
+4 hours 29 min.
22 hours 27 min.

Estimate 22 hours. 27 min.

round—a period of play in a sport or contest

9 Cherie rented a bike. The fee was $8.00 for the first hour and $4.50 for each hour after the first hour. At the end of the ride, Cherie paid the bill of $26.00. How long had Cherie gone bike riding?

- ○ 3 hours
- ○ 4 hours
- ● 5 hours
- ○ 6 hours

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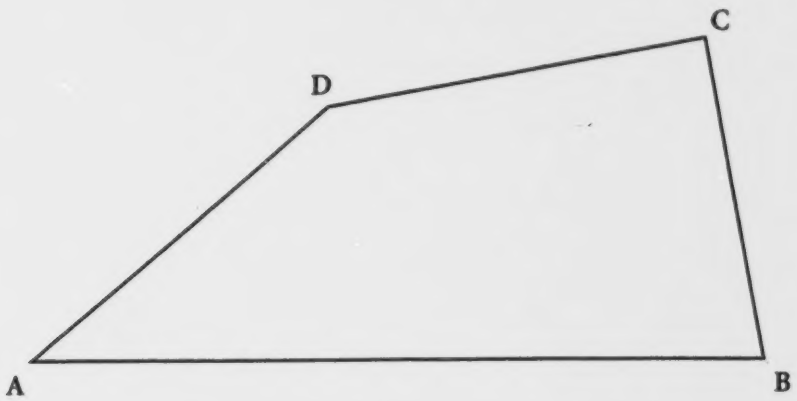
10 From your punch-out tools, use the protractor to solve this problem.



Which is the closest measurement of the **largest** angle?

- ○ 30°
- ○ 40°
- ○ 135°
- ● 150°

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10 Emily writes short stories. She recorded the number of stories published each year in the table below.

WORK PUBLISHED BY YEAR

Year	Number of Published Stories
1993	6
1994	5
1995	4
1996	2
1997	2
1998	11
1999	9

What represents the **median** number of stories published?

- ○ 2
- ● 5
- ○ 6
- ○ 9

published—printed

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12 There are 6 finalists in a trivia contest. If each finalist plays a round against each of the other finalists, how many rounds will have been played in all?

- ○ 6
- ● 15
- ○ 30
- ○ 36

finalist—one of the last contestants
trivia—little-known facts
round—a period of play in a sport or contest

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13 John wants to frame 2 square pictures. He uses 8 feet of wood to frame the first picture. The sides of the second picture are 3 times as long as the sides of the first picture. How many feet of wood does John need to frame the second picture?

- ○ 6
- ○ 8
- ● 24
- ○ 36

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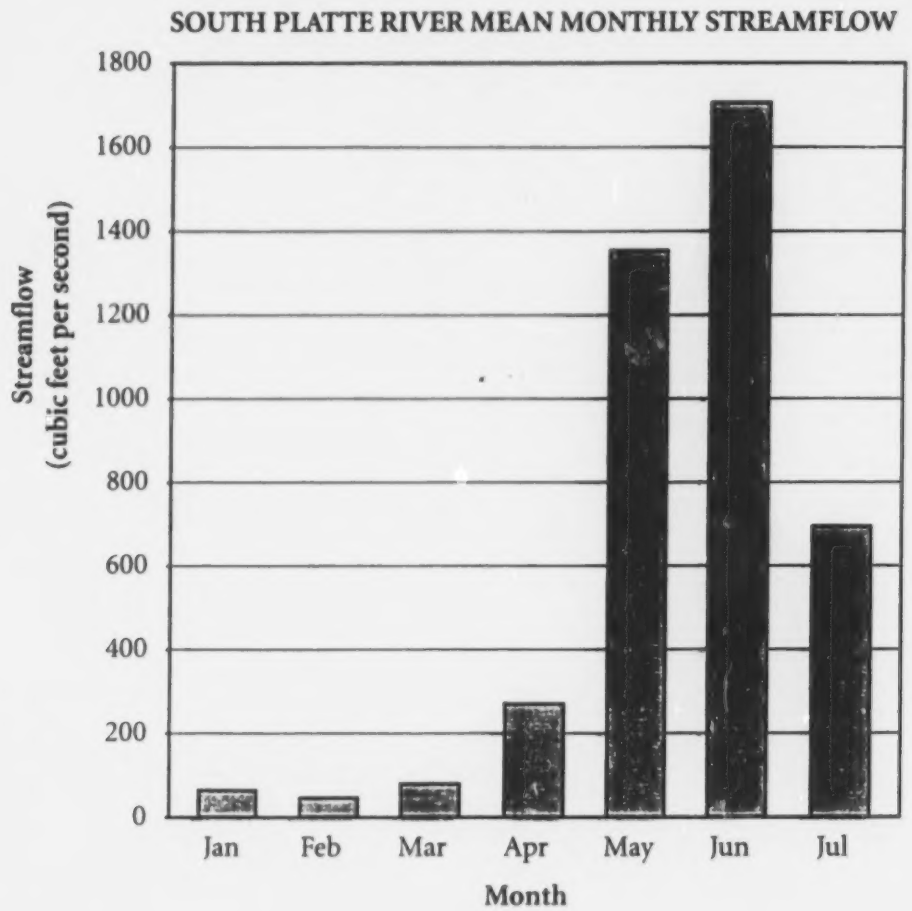
14 Dana used data from the Internet to make the graph below.



Which statement is true, according to the information in the graph?

- ○ The mean streamflow increases steadily from January to July.
- ● The mean streamflow shows the greatest increase from April to May.
- ○ The mean streamflow for June is greater than all other months combined.
- ○ The mean streamflow for May is nearly 10 times the mean streamflow for April.

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15 From your punch-out tools, use the tangram pieces to help you solve this problem.

Read these rules about one tangram shape.

Rules
• The shape has 4 sides.
• Opposite sides of the shape are congruent.
• Opposite sides of the shape are parallel.
• All angles of the shape are **not** right angles.

What tangram shape satisfies **all** the rules? In the space below, trace the tangram shape and write the name of the shape on the line.

_____ shape

27

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Rubric

Exemplary Response:

-

OR

- drawing of a parallelogram

OR

- explanation that identifies the student's reasoning to arrive at the parallelogram

AND

- parallelogram shape

Score Points:

Apply 2-point holistic rubric.

Standard: 4.2 Geometry and Spatial Sense

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53 From your punch-out tools, use the tangram pieces to help you solve this problem.

Read these rules about one tangram shape.

Rule
• The shape has 4 sides.
• Opposite sides of the shape are congruent.
• *Opposite sides of the shape are parallel.*
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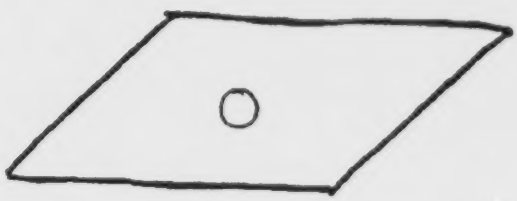

Parallelogram shape

53 From your punch-out tools, use the tangram pieces to help you solve this problem.

Read these rules about one tangram shape.

Rule
• The shape has 4 sides.
• Opposite sides of the shape are congruent.
• Opposite sides of the shape are parallel.
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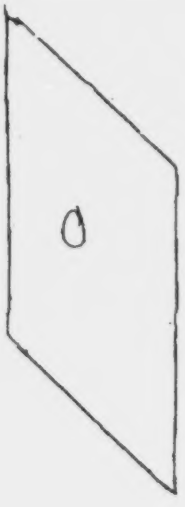


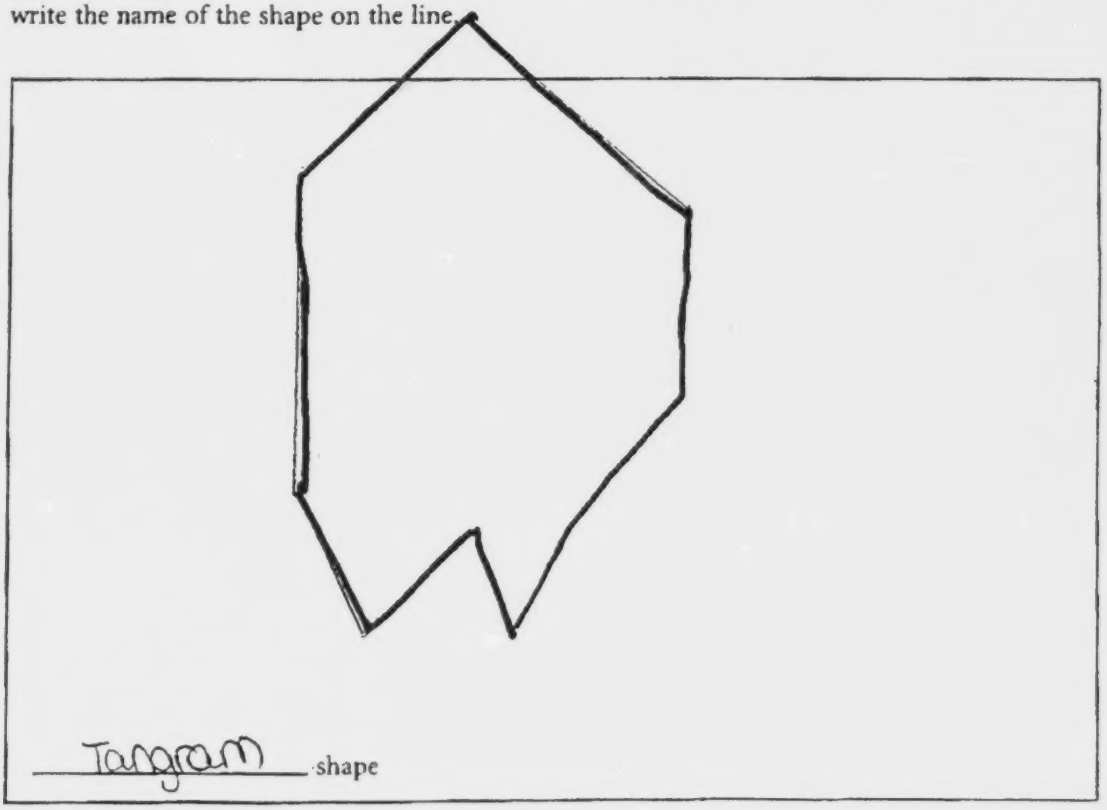
hexagon shape

53 From your punch-out tools, use the tangram pieces to help you solve this problem.

Read these rules about one tangram shape.

Rules
• The shape has 4 sides.
• Opposite sides of the shape are congruent.
• Opposite sides of the shape are parallel.
• All angles of the shape are **not** right angles.

What tangram shape satisfies **all** the rules? In the space below, trace the tangram shape and write the name of the shape on the line.



Tangram shape

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COLORADO

Student Assessment Program

Released Items
Grade 8 Science
Spring 2000

Released Items for the Eighth Grade Science CSAP

CSAP

CSAP Grade 8
Science

Directions

The table below shows precipitation and temperature characteristics of four ecosystems. Use this table to do Number 1.

Ecosystem	Average Yearly (annual) Precipitation	Temperature Range °C (°F)
I	9 centimeters	−40° to 4°C (−40° to 39°F)
II	43 centimeters	−20° to 35°C (−4° to 95°F)
III	327 centimeters	25° to 27°C (77° to 80°F)
IV	5 centimeters	24° to 32°C (75° to 90°F)

1 Which of these ecosystems could be found above the Arctic Circle?

- ● Ecosystem I
- ○ Ecosystem II
- ○ Ecosystem III
- ○ Ecosystem IV

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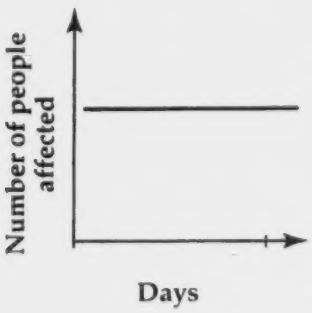
CSAP Grade 8
Science

2 Which graph shows the **most** likely course of a communicable disease outbreak in a village?



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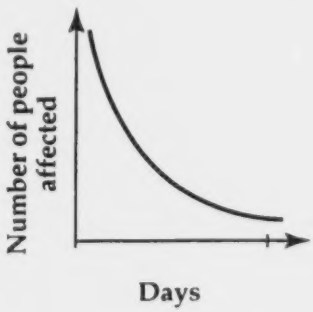

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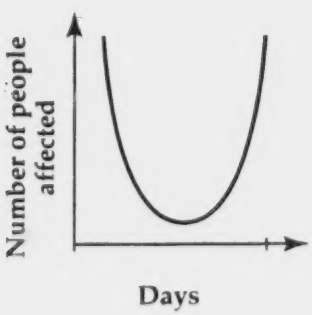

○

●

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3 Soon after a burning candle is covered with a drinking glass, the flame goes out because

- ○ less nitrogen is available.
- ○ less carbon dioxide is available.
- ● less oxygen is available.
- ○ less carbon monoxide is available.

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4 Which of these would be **most** helpful in preventing the spread of diseases?

- ○ increased waste production
- ● improved water treatment
- ○ improved housing construction
- ○ modernized transportation systems

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CSAP Grade 8
Science

PILL BUG INVESTIGATION

Pill bugs are small, hard-shelled crustaceans that are also known as roly-polies. They are good subjects for experiments because they are easy to find in most areas. For example, they can often be found under logs, in decaying piles of leaves, and under rocks.

5 The chart below shows the questions two students asked about pill bugs.

Student	Question
Brian	How do pill bugs react to noise?
Katie	Do pill bugs enjoy music?

Can Brian's question be tested? Explain why or why not.

Can Katie's question be tested? Explain why or why not.

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Key Elements:

Brian's question can be tested through scientific processes by observation (of what pill bugs do when there is a lot of noise).

- Katie's question cannot be tested through scientific processes because no definition of "enjoy" that might apply to pill bugs' listening to music has been provided.
- Katie's question can be investigated scientifically only if "enjoy" can be defined in a way that can be observed or measured for pill bugs' listening to music.
- Katie's question cannot be answered because you can't tell if the pill bugs are enjoying music.

Score Points:

2 points	two key elements
1 point	one key element
0 points	other

Standard: 1.3 Asking questions and stating hypotheses that lead to different types of scientific investigations.

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20 The chart below shows the questions two students asked about pill bugs.

Student	Question
Brian	How do pill bugs react to noise?
Katie	Do pill bugs enjoy music?

Can Brian's question be tested? Explain why or why not.

Yes, it can be tested. We could gather pill bugs and make a certain noise, and see how each react to it. It is experimentally possible.

Can Katie's question be tested? Explain why or why not.

No, it can not be tested. We can't play music to see if they enjoy it. If they react, it does not automatically tell us that they enjoy it. We can only see if they react to it.

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PILL BUG INVESTIGATION

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Brian	How do pill bugs react to noise?
Katie	Do pill bugs enjoy music?

Can Brian's question be tested? Explain why or why not.

yes because he could make alot of noise around a rolie polie and observe how it acts.

Can Katie's question be tested? Explain why or why not.

Yes, it can be tested the same as Brians, just instead of noise use different types of music.

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PILL BUG INVESTIGATION

Pill bugs are small, hard-shelled crustaceans that are also known as roly-polies. They are good subjects for experiments because they are easy to find in most areas. For example, they can oft be found under logs, in decaying piles of leaves, and under rocks.

20 The chart below shows the questions two students asked about pill bugs.

Student	Question
Brian	How do pill bugs react to noise?
Katie	Do pill bugs enjoy music?

Can Brian's question be tested? Explain why or why not.

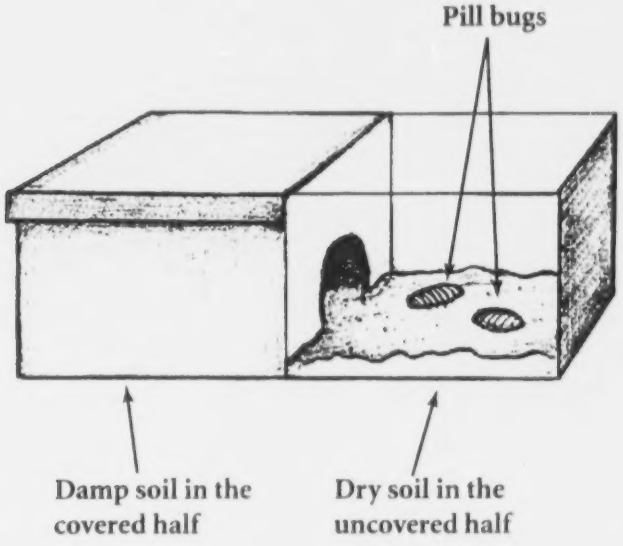
yes because it could be possible

Can Katie's question be tested? Explain why or why not.

yes, because just put bug close to music

Miriam designed an experiment to find out whether pill bugs usually move toward light or toward darkness. Read the following description carefully, because there are some errors in the way she designed her experiment.

Using a piece of cardboard, Miriam divided a shoebox into two halves. She cut a small hole in the divider so the pill bugs could move back and forth between the halves. Next, she covered the bottom of one half of the box with damp soil and placed a lid over this half so that the side with the damp soil would be mostly in the dark. Then she placed dry soil in the other half of the box and left this side uncovered so that it was exposed to light.



designed—planned

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6 Miriam placed two pill bugs in the uncovered side of the box. When she looked into the box 24 hours later, both pill bugs were still in the uncovered side of the box. She concluded that pill bugs usually move toward light rather than darkness.

Describe **three** specific changes Miriam could make to improve her experiment.

1) _____

_____

2) _____

_____

3) _____

_____

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Key Elements:

Miriam should use the same soil in both halves of the box.

Light and darkness are the only variables being investigated, so all other possible variables should be controlled.

Miriam should use more than two pill bugs in her experiment. Results of an experiment are not valid unless the sample size is large enough to be representative.

Miriam should place the pill bugs in the center of the box (under the arch) rather than on one side, with easy access to the light or the dark side of the box.

Miriam should observe the pill bugs more frequently. She should make more observations (e.g., every hour). It is possible that the pill bugs moved, but Miriam did not observe them in different places.

Miriam could have discussed controlling temperature, air flow, or other logical variables.

Score Points:

3 points	three key elements
2 points	two key elements
1 point	one key element
0 points	other

Standard: 1.4 Creating a written plan for investigations.

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21 Miriam placed two pill bugs in the uncovered side of the box. When she looked into the box 24 hours later, both pill bugs were still in the uncovered side of the box. She concluded that pill bugs usually move toward light rather than darkness.

Describe **three** specific changes Miriam could make to improve her experiment.

1) She should put the pill bugs in between the light and dark areas to begin with.
2) She should have kept the soil the same in both places.
3) She should have used more pill bugs.

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21 Miriam placed two pill bugs in the uncovered side of the box. When she looked into the box 24 hours later, both pill bugs were still in the uncovered side of the box. She concluded that pill bugs usually move toward light rather than darkness.

Describe **three** specific changes Miriam could make to improve her experiment.

1) She should put the same kind of soil (dry or damp) in both parts of the box.
2) She should have put the same type of food on both sides of the box
3) She should have used more pill bugs to have her experiment turn out more accurately

BEST COPY AVAILABLE

21 Miriam placed two pill bugs in the uncovered side of the box. When she looked into the box 24 hours later, both pill bugs were still in the uncovered side of the box. She concluded that pill bugs usually move toward light rather than darkness.

Describe **three** specific changes Miriam could make to improve her experiment.

1) Use damp soil in all halves or use dry soil in all halves.
2) Instead of a cardboard ceiling, she should make it out of dirt
3) She should use only one pill bug.

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21A-0

21 Miriam placed two pill bugs in the uncovered side of the box. When she looked into the box 24 hours later, both pill bugs were still in the uncovered side of the box. She concluded that pill bugs usually move toward light rather than darkness.

Describe **three** specific changes Miriam could make to improve her experiment.

1) She could put some leaves in the box

2) She could put some ~~stiks~~ sticks in it as well

3) She could put some rocks in it to mak them fell at home

Dan and Marie each collected pill bugs and measured their lengths. The results of their observations are shown in the tables below. Use these results to do Number 22.

Dan's Data

Pill bug	Length (in millimeters)
1	7
2	12
3	10
4	15

Marie's Data

Pill bug	Length (in millimeters)
1	12
2	9
3	8
4	6
5	14
6	12
7	7
8	8
9	9
10	10

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7 Dan concluded that the average (mean) length of a pill bug is 11 mm. Marie concluded that the average length of a pill bug is 9.5 mm.

Whose average is more likely to be the average length of a pill bug, Dan's or Marie's?

_____

Explain why you think so.

_____

_____

_____

_____

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Key Element:

Marie's

AND

Marie used a larger sample size than Dan (give credit if Marie can be inferred from the explanation)

Score Points:

1 point	one key element
0 points	other

Standard: 1.6 Interpreting and evaluating data in order to formulate conclusions.

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22 Dan concluded that the average (mean) length of a pill bug is 11 mm. Marie concluded that the average length of a pill bug is 9.5 mm.

Whose average is more likely to be the average length of a pill bug, Dan's or Marie's?

Marie's

Explain why you think so.

Marie used more pill bugs so there is more data. She has less room for experimental error.

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22 Dan concluded that the average (mean) length of a pill bug is 11 mm. Marie concluded that the average length of a pill bug is 9.5 mm.

Whose average is more likely to be the average length of a pill bug, Dan's or Marie's?

Dan's

Explain why you think so.

Dan's is the closest because when you add all of the lengths together and then divide by the number of lengths you u have you get 11 mm.

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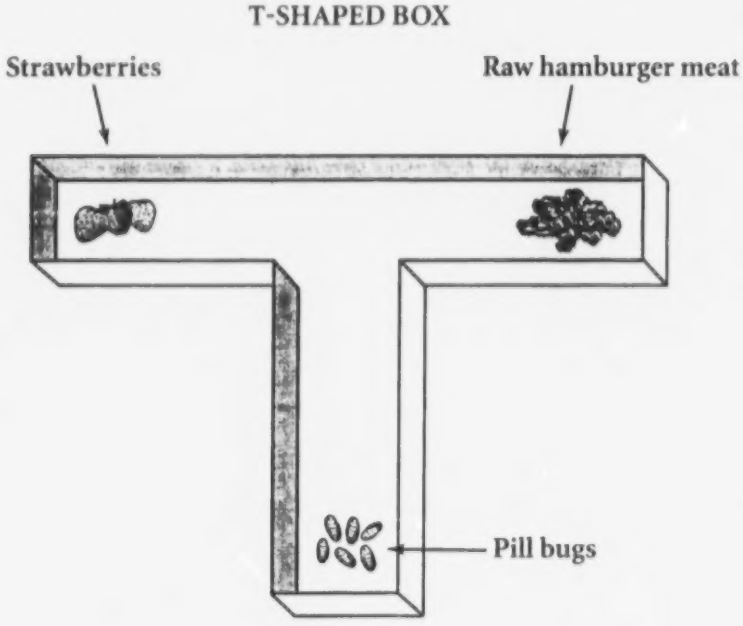
8 Jim used a T-shaped box with strawberries, raw hamburger meat, and pill bugs to conduct his pill bug experiment. His setup is shown below.



What question is Jim probably investigating?

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State a hypothesis that Jim could be testing.

Why does Jim use a box shaped like a "T"? Tell why Jim puts the strawberries and the hamburger meat where he does.

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Key Elements:

- Are pill bugs herbivores, carnivores, or omnivores?
- What kind of food do pill bugs prefer?
- Can pill bugs locate food in a maze?

- Pill bugs are herbivores (plant eaters).
- Pill bugs are carnivores (meat eaters).
- Pill bugs are omnivores (they eat plants and meat).
- Pill bugs can learn to locate food in a maze.
- other similar hypotheses about pill bug eating preferences

The opposite placement of the foods allows Jim to notice whether, over time, the pill bugs go toward both foods or toward one only.

Score Points:

3 points	three key elements
2 points	two key elements
1 point	one key element
0 points	other

Standard: 1.3 Asking questions and stating hypotheses that lead to different types of scientific investigations.

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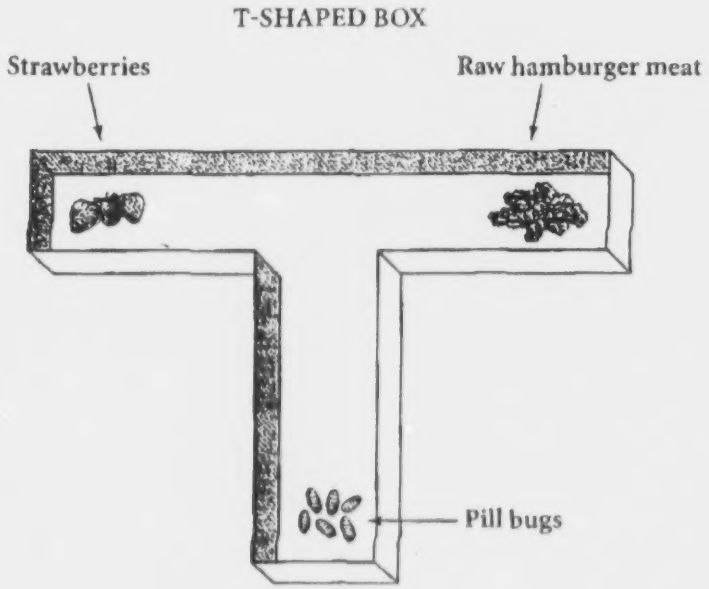
23 Jim used a T-shaped box with strawberries, raw hamburger meat, and pill bugs to conduct his pill bug experiment. His setup is shown below.



What question is Jim probably investigating?

He is probably finding experimentally what pill bugs eat. Are they herbivores or carnivores? If they go to both sides, they may be omnivores.

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State a hypothesis that Jim could be testing.

Pill bugs are herbivores, and would be drawn to the strawberries.

Why does Jim use a box shaped like a "T"? Tell why Jim puts the strawberries and the hamburger meat where he does.

The box gives an accurate decision for the pill bugs. They can choose an equal length on either side to get to food. The foods are far enough away from each other to give him an accurate conclusion for his experiment.

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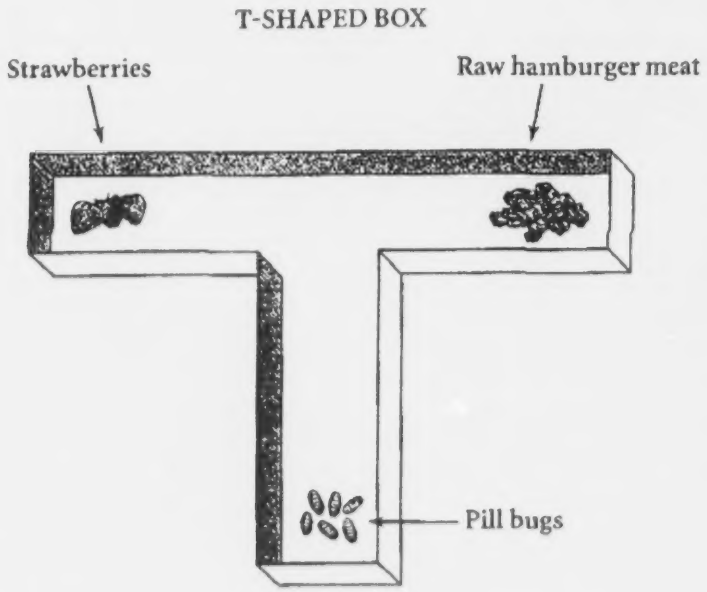
23 Jim used a T-shaped box with strawberries, raw hamburger meat, and pill bugs to conduct his pill bug experiment. His setup is shown below.



What question is Jim probably investigating?

Do pill bugs like fruit or meat best?

State a hypothesis that Jim could be testing.

I think the pill bugs would like the meat better than the fruit.

Why does Jim use a box shaped like a "T"? Tell why Jim puts the strawberries and the hamburger meat where he does.

He probably wanted to see if the smell would contract.

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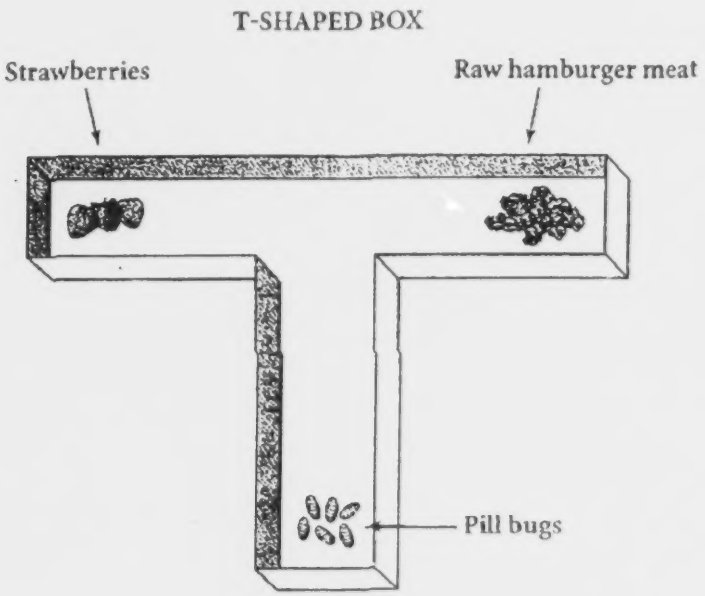
23A-1

23 Jim used a T-shaped box with strawberries, raw hamburger meat, and pill bugs to conduct his pill bug experiment. His setup is shown below.



What question is Jim probably investigating?

What kind of food the pill bugs will go to, or what kind of food that ther eat

State a hypothesis that Jim could be testing.

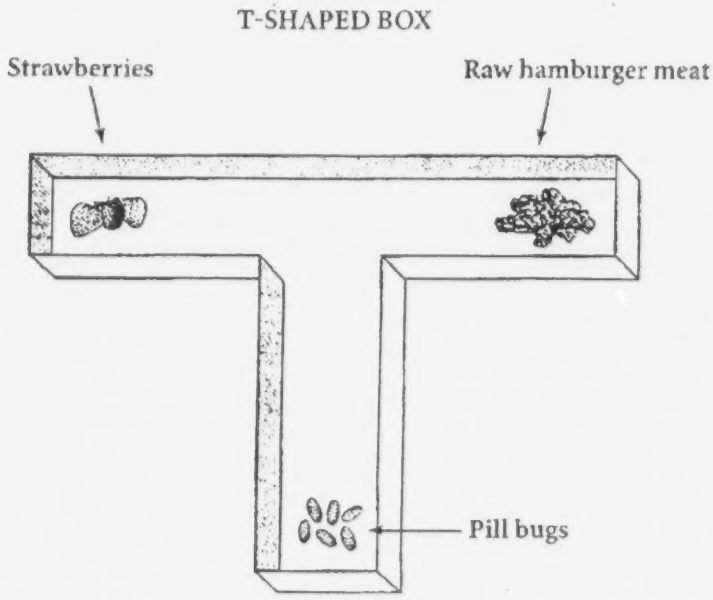
Probably what food are they atracted to.

Why does Jim use a box shaped like a "T"? Tell why Jim puts the strawberries and the hamburger meat where he does.

He puts them there beause he wants to see if they'd travel the distance And a T-shape box would be good for that.

BEST COPY AVAILABLE

23 Jim used a T-shaped box with strawberries, raw hamburger meat, and pill bugs to conduct his pill bug experiment. His setup is shown below.



What question is Jim probably investigating?

If the Pill-bugs are scavengers or if they like getting fresh and their own food.

State a hypothesis that Jim could be testing.

If pill-bugs are scavengers,

Why does Jim use a box shaped like a "T"? Tell why Jim puts the strawberries and the hamburger meat where he does.

Well if the pill-bugs are scavengers then they'll go for the meat but then Jim could change the place of where the hamburger is to see if there smart and go to the left and get the hamburger or if they'll go back to the right.

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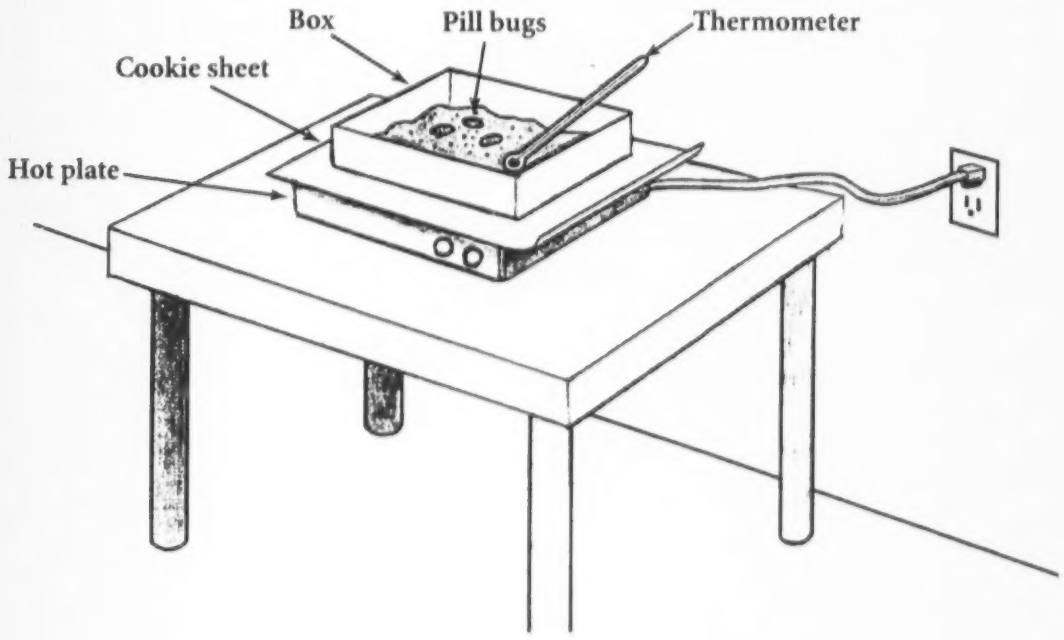
Marvin did an investigation with the setup shown below.



Before turning on the hot plate, Marvin noticed the pill bugs were not moving. Then, as he changed the temperature of the hot plate, he observed the pill bugs' behavior at several different temperatures. The results are shown in the table below.

Temperature (degrees Celsius)	Distance Moved per Minute (in centimeters)			Average Distance per Minute (in centimeters)
	Pill bug 1	Pill bug 2	Pill bug 3	
4°	1	1	1	1
8°	2	2	2	2
12°	4	5	3	4
16°	7	6	8	7
20°	10	11	9	10
24°	12	16	17	15
28°	18	22	20	20
32°	23	24	28	25
36°	31	33	32	32

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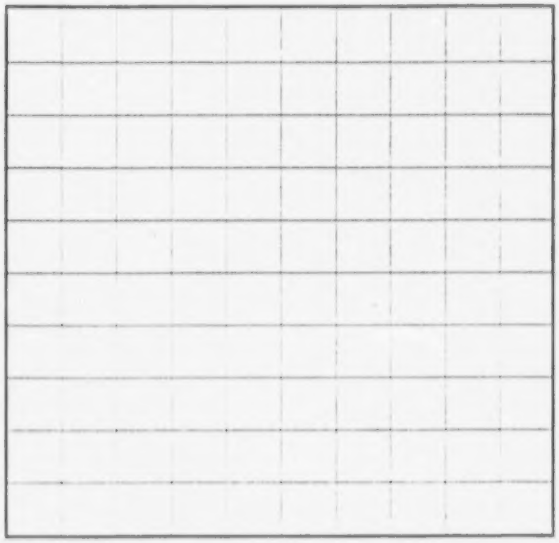
9 On the grid below, create a **line graph** that shows the relationship between temperature and the average distance moved per minute by the pill bugs in Marvin's experiment. **Be sure to provide a label for each axis and a title for the graph.**



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(Total Score Points 4)

Graph Format

Key Element	Acceptable examples	Unacceptable examples
Title	• Temperature vs. Distance • Pill Bug Movement • Degrees vs. Cm Moved	•Graph •Data Table •Average Distance •Averages •Pill Bug Investigation
Length of Line	Line may extend beyond points in either direction.	If the line begins at 0 and connects with the nine points, it is incorrect.
Space Utilization	Scaled from 0–40 on both axes, with each line being no more than 5cm	Scaled less than 0–40 on the axes, with each line being more than 5cm
Correct information on both X and Y axis	Temperature on the X axis Average Distance on the Y axis	Words such as trials, tests, or times are not acceptable.
X axis labeled with units	Degrees C (cm if X axis label is distance the pill bugs move)	Incorrect or no label
Y axis labeled with units	Distance pill bug moved in cm (Degrees C if the Y axis is Temperature)	Incorrect or no label
Data Plotted	Only the nine average distances may be plotted.	No other information may be plotted on either axis.

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Score Points:

2 points	Six or more key elements
1 point	Four or five key elements
0 points	Three or fewer key elements / irrelevant, unclear, or inaccurate information

Graph accuracy:

Score Points:

2 points	eight or nine data points plotted correctly with a line connecting the points
1 point	six or seven data points plotted correctly with a line connecting the points or all data points plotted correctly but not connected with a line
0 points	five or fewer data points plotted correctly or irrelevant, unclear, or inaccurate information

Standard: 1.7 Communicating results of investigations in appropriate ways.

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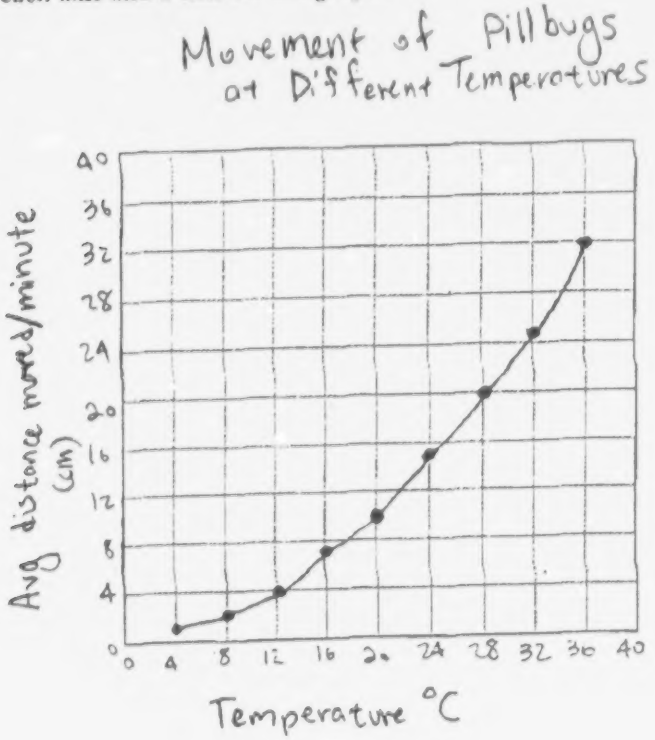
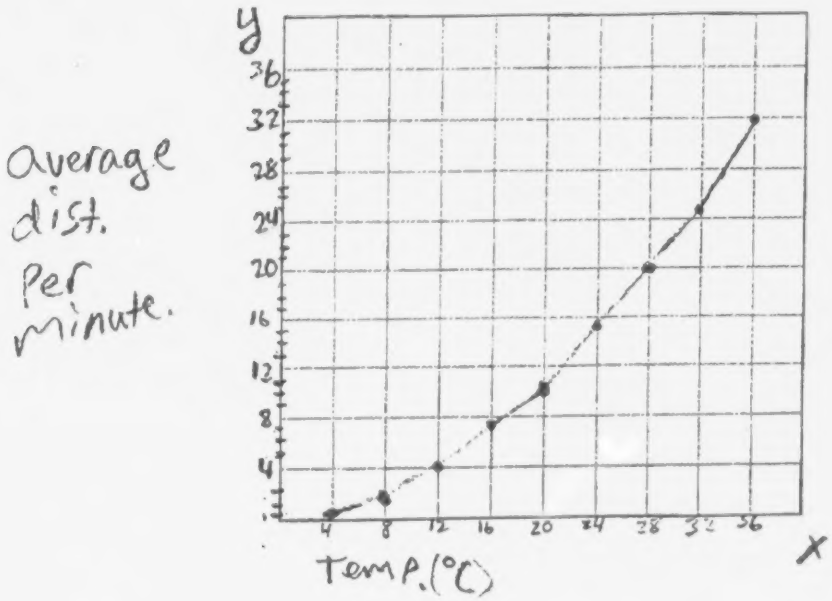
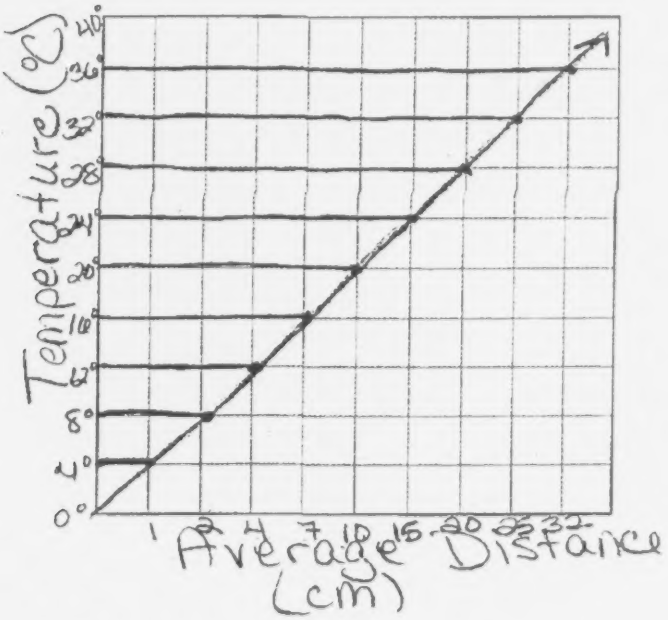
24 On the grid below, create a **line graph** that shows the relationship between temperature and the average distance moved per minute by the pill bugs in Marvin's experiment. **Be sure to provide a label for each axis and a title for the graph.**



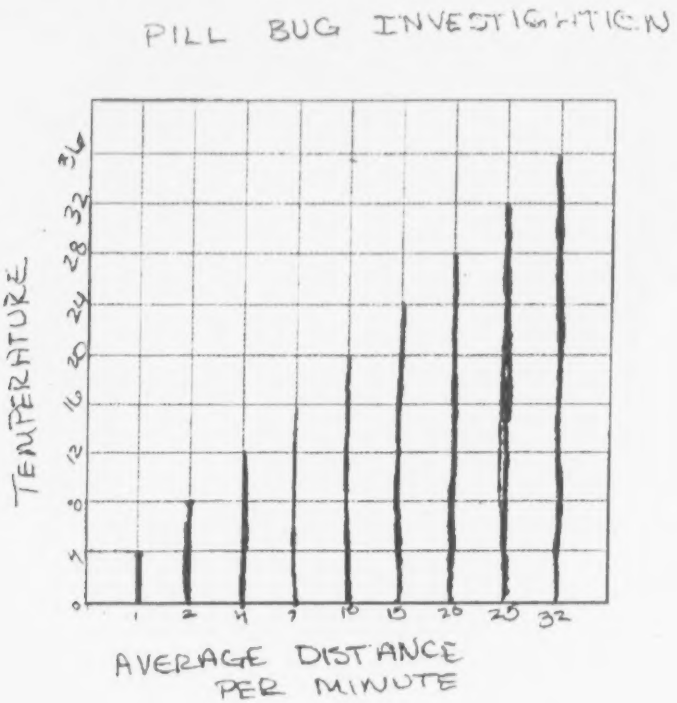
24 On the grid below, create a **line graph** that shows the relationship between temperature and the average distance moved per minute by the pill bugs in Marvin's experiment. **Be sure to provide a label for each axis and a title for the graph.**



24 On the grid below, create a **line graph** that shows the relationship between temperature and the average distance moved per minute by the pill bugs in Marvin's experiment. **Be sure to provide a label for each axis and a title for the graph.**

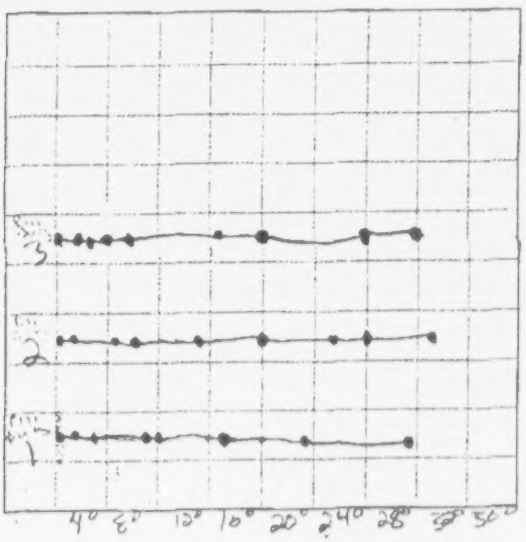


24 On the grid below, create a **line graph** that shows the relationship between temperature and the average distance moved per minute by the pill bugs in Marvin's experiment. **Be sure to provide a label for each axis and a title for the graph.**



24A-0

24 On the grid below, create a **line graph** that shows the relationship between temperature and the average distance moved per minute by the pill bugs in Marvin's experiment. **Be sure to provide a label for each axis and a title for the graph.**



10 By looking at the data table or your graph, on pages 18 and 19, describe the relationship between temperature and pill bug movement.

_____

_____

_____

Predict how far a pill bug would move per minute if the temperature were increased to 40°C.

_____

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Key Elements:

- As temperature increases, pill bug motion increases.
- Pill bugs become more active/less sleepy/less sluggish at warmer temperatures.
- Pill bugs move around more when the heat makes them uncomfortable.
- other plausible description of the temperature/movement pattern

The "average" pill bug will move about 36–42 cm per minute.

Score Points:

2 points	two key elements
1 point	one key element
0 points	other

Standard: 1.6 Interpreting and evaluating data in order to formulate conclusions.

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25 By looking at the data table or your graph, on pages 18 and 19, describe the relationship between temperature and pill bug movement.

As the temperature rises the pill bug movement increases

Predict how far a pill bug would move per minute if the temperature were increased to 40°C.

39 cm

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25 By looking at the data table or your graph, on pages 18 and 19, describe the relationship between temperature and pill bug movement.

When the temperature went up the distance became greater.

Predict how far a pill bug would move per minute if the temperature were increased to 40°C.

15

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25 By looking at the data table or your graph, on pages 18 and 19, describe the relationship between temperature and pill bug movement.

They are all around the same time

Predict how far a pill bug would move per minute if the temperature were increased to 40°C.

They would move faster

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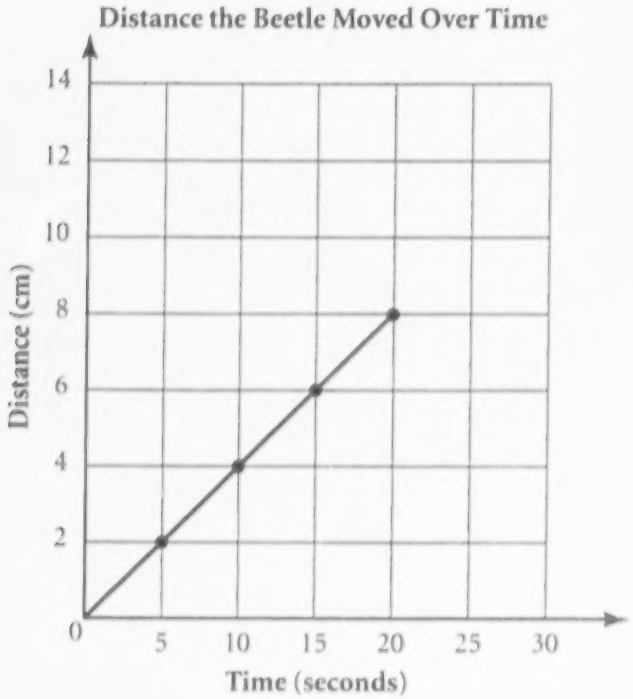
CSAP Grade 8
Science

11 The graph shows the distance traveled by a beetle during a period of twenty seconds.



If the beetle keeps moving at the same speed, how far will it have traveled at the end of 30 seconds?

- ○ 8 centimeters
- ○ 10 centimeters
- ● 12 centimeters
- ○ 14 centimeters

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12 There is more dissolved oxygen in the water near the surface of a lake ecosystem than at the bottom. Give **two** reasons to explain why this happens.

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Key Elements:

more light near the surface

More plants can grow there.

Photosynthesis from the plants will produce oxygen.

Surface contact with the atmosphere can produce dissolved oxygen near the surface.

Score Points:

2 points	two key elements
1 point	one key element
0 points	other

Standard: 3.2.1 Describing the basic process of photosynthesis.

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31 There is more dissolved oxygen in the water near the surface of a lake ecosystem than at the bottom. Give **two** reasons to explain why this happens.

There is more oxygen at the surface because the surface is exposed to the oxygen in the atmosphere. Also a lot of plants that grow in the water and give out oxygen rise to the surface

31A-1

31 There is more dissolved oxygen in the water near the surface of a lake ecosystem than at the bottom. Give two reasons to explain why this happens.

Because there is more plant life at the top of the ecosystem than at the Bottom. therefor there must be more oxygen at the top of the ecoystem.

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31A-0

31 There is more dissolved oxygen in the water near the surface of a lake ecosystem than at the bottom. Give **two** reasons to explain why this happens.

This is so because there is more oxygen near the surface of the water in below down deep into the lake

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CSAP Grade 8
Science

13 Figure 1 below shows a jar containing ice and lemonade. After all the ice has melted (Figure 2), will the mass of the jar and its contents be greater than, less than, or the same as it was before the ice melted?

_____

Explain your answer.

_____

_____

_____

Figure 1

Figure 2

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Key Elements:

- the same

AND one of the following

- mass is conserved
- number of atoms is the same
- amount of matter is the same
- nothing enters or leaves the jar

NOTE: Give credit even if the first part is not stated separately but is indicated in the explanation

Score Points:

1 point	one key element
0 points	other

Standard: 2.3.3 concept of conservation of mass within a closed system

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42 Figure 1 below shows a jar containing ice and lemonade. After all the ice has melted (Figure 2), will the mass of the jar and its contents be greater than, less than, or the same as it was before the ice melted?

Same

Explain your answer.

The mass of the jar would be the same because water was just in two different states of matter- solid and liquid and that doesn't change the mass.

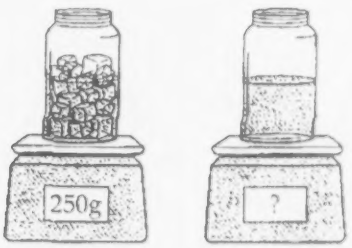

Figure 1 Figure 2

BEST COPY AVAILABLE

42A-0

42 Figure 1 below shows a jar containing ice and lemonade. After all the ice has melted (Figure 2), will the mass of the jar and its contents be greater than, less than, or the same as it was before the ice melted?

greater

Explain your answer.

The ice will come to it's liquid form causing the liquid level to rise.

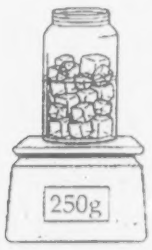

Figure 1

Figure 2

14 Which of the following is **not** a compound?

- ● air
- ○ carbon dioxide
- ○ water
- ○ carbon monoxide

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15 Which of the following best indicates the phase or phases for most of the water in a container as the temperature of the water changes from 5°C to 75°C?

- ○ vapor only
- ● liquid only
- ○ solid, then liquid
- ○ solid, then liquid, then vapor

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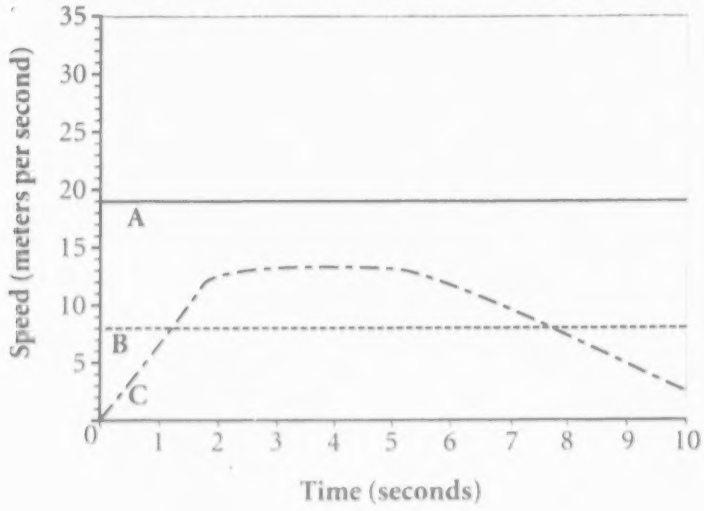
CSAP Grade 8
Science

16 The lines labeled A, B, and C on the graph below show the following three situations (not necessarily in the same order):

- a sprinter running a 50-meter dash
- a bicyclist in the middle of a 100-kilometer ride
- a jogger in the middle of a 10-kilometer training run

SPEED/TIME : SPRINTING, BICYCLING, AND JOGGING



Which line (A, B, or C) shows the sprinter running a 50-meter dash?

_____

Give one reason why you think so.

_____

_____

sprinter—a fast runner

91

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Key Elements:

Line C

AND

- Student explanations should indicate that the sprinter starts from a complete stop and accelerates initially in the 50-meter race, while the jogger and the bicyclist are moving at a more-or-less constant velocity.
- Student response should note that the speed of the sprinter decreases after about 4 or 5 seconds (which is a reasonable time to sprint 50 meters).

Score Points:

2 points	two key elements
1 point	one key element
0 points	other

Standard: 2.3.5 describing quantities that characterize moving objects

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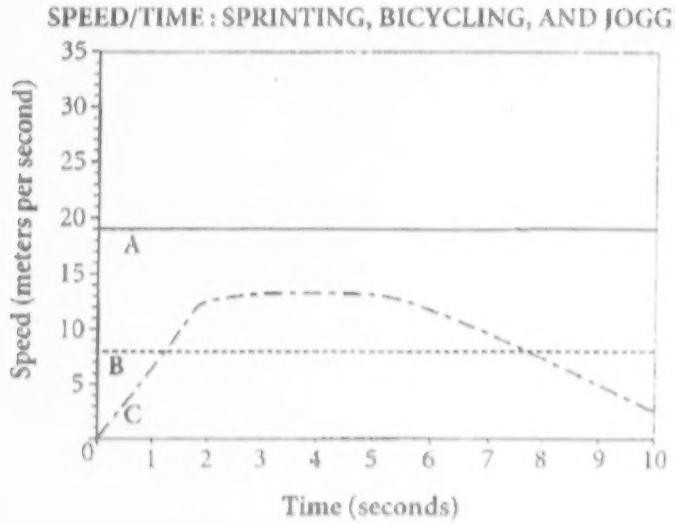
61 The lines labeled A, B, and C on the graph below show the following three situations (not necessarily in the same order):

- a sprinter running a 50-meter dash
- a bicyclist in the middle of a 100-kilometer ride
- a jogger in the middle of a 10-kilometer training run



Which line (A, B, or C) shows the sprinter running a 50-meter dash?

C

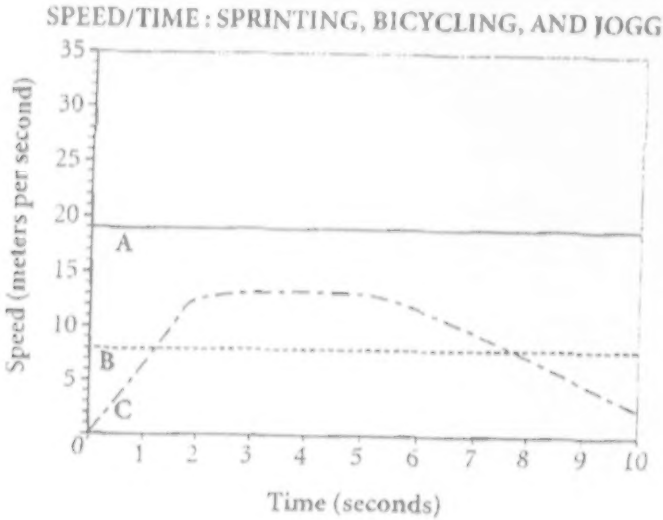
Give one reason why you think so.

The sprinter will start off in a stopped position, then excellerate to his max speed, and then decrease as he loses energy.

sprinter—a fast runner

61 The lines labeled A, B, and C on the graph below show the following three situations (not *necessarily in the same order*):

- a sprinter running a 50-meter dash
- a bicyclist in the middle of a 100-kilometer ride
- a jogger in the middle of a 10-kilometer training run



Which line (A, B, or C) shows the sprinter running a 50-meter dash?

C

Give one reason why you think so.

C is the only line that crosses 5 meters & 10 seconds.

sprinter—a fast runner

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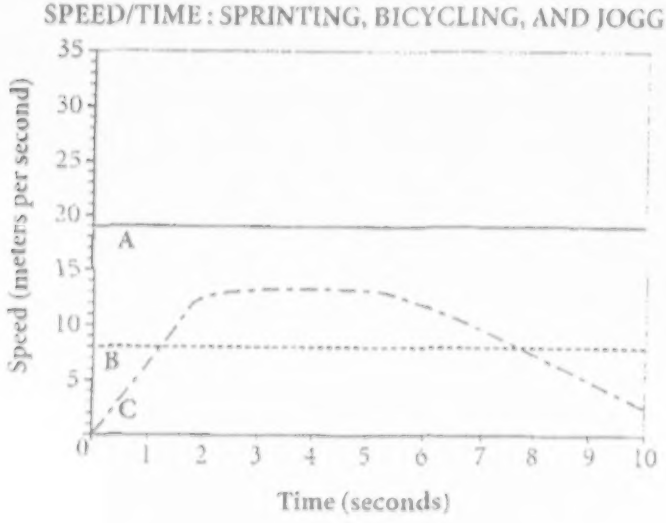
61 The lines labeled A, B, and C on the graph below show the following three situations (not necessarily in the same order):

- a sprinter running a 50-meter dash
- a bicyclist in the middle of a 100-kilometer ride
- a jogger in the middle of a 10-kilometer training run



Which line (A, B, or C) shows the sprinter running a 50-meter dash?

B

Give one reason why you think so.

In a quick sprint usually you stay at about the same rate the whole way.

sprinter—a fast runner

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17 A layer of ozone surrounds Earth. How does this layer of ozone help living organisms?

- ○ It is needed for photosynthesis.
- ○ It keeps heat from escaping from the atmosphere.
- ○ It stops air from leaving Earth's atmosphere.
- ● It provides protection from the Sun's ultraviolet radiation.

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18 Is water considered a renewable or a nonrenewable resource? Circle your answer.

renewable **nonrenewable**

Explain your answer.

_____

_____

_____

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Key Elements:

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circle around the word **renewable**

AND one of the following

- Water goes through a cycle.
- Water evaporates from lakes, streams, oceans, and other sources. It condenses in clouds and is released as snow, rain, sleet, etc.
- any explanation that mentions that water once used can be recovered (for example, dirty/polluted water can be cleaned/distilled so it can be used again)

---

circle around the word **nonrenewable**

AND one of the following

- We can run out of fresh water.
- any response indicating that demand for water could exceed supply

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Score Points:

1 point one key element
0 points other

Standard: 5.1 renewable and nonrenewable resources

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69 Is water considered a renewable or a nonrenewable resource? Circle your answer.

(renewable) nonrenewable

Explain your answer.

water is renewable because it has a water cycle. Evaporates, forms clouds, rains, and start all over again.

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69 Is water considered a renewable or a nonrenewable resource? Circle your answer.

renewable (nonrenewable)

Explain your answer.

Because it cannot be reused.